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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,892	01/17/2006	Moon-Soo Han	0001.1125	3441

49455 7590 06/04/2009

STEIN MCEWEN, LLP
1400 EYE STREET, NW
SUITE 300
WASHINGTON, DC 20005

EXAMINER	
PENDLETON, DIONNE	
ART UNIT	PAPER NUMBER
2627	

MAIL DATE	DELIVERY MODE
06/04/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/564,892	HAN, MOON-SOO	
	Examiner	Art Unit	
	DIONNE H. PENDLETON	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 May 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *1/17/2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Request for Reconsideration

1. Examiner has applied a new grounds of rejection for the claims finally rejected in the last Office action mailed 3/17/2009, therefore, the finality of that action is withdrawn.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show **"an eccentrically rotating track of an optical disk"** as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If

the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claims 7 and 8** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Specifically, claim 7 recites in lines 3-4, "…controller calculates a target track to be jumped to". It is unclear to the Examiner how or why the controller calculates a "target track", considering that the target track is specified by an input to the disk drive apparatus, e.g. a user command to move to a new specified target track. The Applicant's response in papers filed 5/8/2009 are acknowledged. However, merely citing locations in the specification which include similar recitations is not sufficient to clarify the issue of record.

Claim 8 is rejected due to its dependency upon rejected base claim 7.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 1-8, 13 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Aoe (US 2004/00130057)** in view of **Nakatsu (Patent Number 4,955,009)** in view of **Akiyama (Patent Number 5,712,835).**

Regarding apparatus claim 1 and method claim 4,

AOE teaches an apparatus for performing track jumping, the apparatus comprising:

a pickup **("14" in figure 7**) to read a signal from an optical disc;

an RF processing unit **("16" in figure 7)** to generate an error signal to control the pickup by shaping and amplifying the signal read by the pickup **([0047]);**

a servo **("18")** to judge a position of the pickup based on the error signal **([0047])**; and a driver to move the pickup **([0047] teaches moving the pickup for tracking/ focusing control).**

Aoe fails to expressly teach the generation of track jump start and end control signals, or that track jumping Is performed in consideration of the position of the pickup.

NAKATSU teaches an apparatus for performing track jumping, the apparatus comprising:

a pickup **("6" in figure 2**) to read a signal from an optical disc;

an RF processing unit **(inherent)**;

a servo to judge a position of the pickup based on the error signal ***(see discussion of photosensitive elements for generating error signals in column 1, lines 25-30; also see column 1, lines 40-42 for discussion of track following mode)***, generate a track jump start control signal **("S14" in figure 2 and column 1, lines 59-62)**, and generate a track jump end control signal ***(column 2, lines 63-66 discloses generating diminishing reference speed signals as a function of the diminishing distance between the pickup to the target track during a track access, the final reference speed signal corresponding to a "track jump end" control signal);***

and a driver **("5" in figure 2)** to move the pickup directly to a target track of the optical disc in response to the track jump start control signal, and stop moving the pickup in response to the track jump end control signal.

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Aoe and Nakatsu, such that the device of Aoe includes a servo operating to generate track jump start and end control signals for the driver, for the purpose moving the light spot of the pickup to a target track and commencing data reproduction and/or recording.

Nakatsu fails to expressly teach that the track jump start control signal is based on the judged position of the pickup.

AKIYAMA teaches an optical disk drive apparatus wherein in an access operation from a position P2 to a target position P3, the light spot is correctly positioned in the center of the track before the start of the track jump **(column 4, lines 59-66, column 7, lines 14-25, column 8, lines 62-65 and column 9, lines 6-11).** Akiyama is therefore interpreted as teaching that the track jump from P2 *directly* to P3 is based on the judged position of the pickup, since the track jump from position P2 starts only after the position of the light spot has been corrected **(column 4, lines 59-66)**.

It would have been obvious for one of ordinary skill in the art at the time of the invention to alter the invention of AOE and NAKATSU per the teachings of AKIYAMA, for the purpose of improving the accuracy of the access operation.

Regarding claim 2,

Akiyama teaches wherein if the judged position of the pickup unit is within a reference range e.g. the center of the track, the servo outputs a predetermined voltage as the track jump start control signal to the driver **(column 9:5-11 discloses that the light spot must be appropriately positioned *before* the second track jump)**.

Regarding claim 3,

The combined disclosures of Aoe, Nakatsu and Akiyama, specifically Akiyama teaches that if the judged position of the pickup unit is not within a reference range e.g. the center of the track, the servo cuts off a predetermined voltage from being output as

the track jump start control signal to the driver ***(the velocity generating signal is cut off following the completion of the first jump but prior to the start of the second jump, for the purpose of adjusting the position of the light spot)*** until the judged position of the pickup is within the reference range **(column 9:5-11 discloses that the light spot must be appropriately positioned i.e., "within the reference range" *before* the second track jump commences).**

Regarding claim 5,

The combined disclosures of Aoe, Nakatsu and Akiyama, specifically Akiyama teaches wherein if the judged position of the pickup unit is within a reference range e.g. the center of the track, the servo outputs a predetermined voltage as the track jump start control signal to the driver **(column 9:5-11 discloses that the light spot must be appropriately positioned *before* the second track jump)**;

and if the judged position of the pickup unit is not within a reference range e.g. the center of the track, the servo cuts off a predetermined voltage from being output as the track jump start control signal to the driver ***(the velocity generating signal is cut off following the completion of the first jump but prior to the start of the second jump, for the purpose of adjusting the position of the light spot)*** until the judged position of the pickup is within the reference range **(column 9:5-11 discloses that the light spot must be appropriately positioned i.e., "within the reference range" *before* the second track jump commences)**.

Regarding claim 6,

The combined disclosures of **Aoe** and **Nakatsu** teach an apparatus for performing track jumping of an optical pickup in an optical disc recording/reproducing apparatus, the apparatus comprising:

an RF processing unit **("16" in figure 8 of Aoe)** to generate an error signal to control the pickup by shaping and amplifying the signal read by the pickup;

a servo **("18" in figure 8 of Aoe)** to judge a position of the pickup relative to a track of the optical disc based on the positional error signal, and output a tracking control signal for controlling a position of the optical pickup based on the judged position;

and a driver **("5" in figure 2 of Nakatsu)** to control the position of the optical pickup using the tracking control signal output from the servo to move the pickup directly to a target track of the optical disc.

Neither Aoe nor Nakatsu expressly teach that a controller for monitoring tracking and control track jumping, and also operating to delay outputting the track jump start control signal to the driver until the tracking control signal indicates that the position of the optical pickup is in a predetermined location.

AKIYAMA teaches that a controller **("8" in figure 2)** for monitoring the tracking control signal **(TES)** and controlling track jumping based on the tracking control signal **(column 6, lines 61 through column 7, line 4)** and is further interpreted as teaching that a track jump start control signal is generated only if the position of the optical pickup

is at a predetermined location. Specifically, Akiyama teaches that prior to jumping from position P2 to position P3, the light spot is correctly positioned in the center of the track before the start of the track jump **(column 8, lines 62-65 and column 9, lines 6-11).** Akiyama is thereby fairly interpreted as teaching that if the position of the optical pickup is not at a predetermined location i.e., the tracks center as determined by tracking control unit **("5" in figure 2),** the track jump start control signal is not enabled.

The combined disclosures of Aoe, Nakatsu and Akiyama do not expressly teach that the controller outputs a track jump start control signal only if the position of the optical pickup is within a *predetermined range* of the center of the track. However, since Akiyama teaches that by centering the light spot on the instant track prior to commencing a track jump, the accuracy of a track jump is improved, it follows that delaying a track jump until the pickup is within a predetermined range of a center of a track, will also act to increase the accuracy of a subsequent track jump.

Therefore, It would have been obvious for one of ordinary skill in the art at the time of the invention to alter the invention of Aoe , NAKATSU per the teachings of AKIYAMA, for the purpose of improving the accuracy of the access operation.

Regarding claim 7,

As best understood with regard to the USC 112 second paragraph rejection above, Nakatsu teaches a controller **(see command circuit "90")** outputs a track jump start signal to the driver **("access command" in column 1, lines 46-62),**

sets an output time of the track jump-end signal **(column 1, 59-62 discloses that a reference speed pattern is generated, also see column 2, lines 63-66),** and calculates a target track to be jumped **(column 1, lines 47-54 discloses that the target track is specified after receipt of an access command by an "N" and "D" input, said specification of the target track is calculated as corresponding at least in part to "the controller calculates the target track").**

Regarding claim 8,

Nakatsu teaches the apparatus of claim 6, wherein: the controller outputs the track jump end signal to the driver when the optical pickup arrives at the target track **(column 2, lines 63-66 discloses control signals for ending a track jump/access operation).**

5. Claims 9, 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Aoe** in view of **Nakatsu** and **Akiyama,** and further in view of **Hirai (US 2002/0122367).**

Regarding claim 9,

As recited in the detailed rejections of independent claims 1, 4 and 6, above, the combined disclosures of **Aoe, Nakatsu** and **Akiyama**, teach a method of controlling track jumping of an optical, the method comprising:

judging whether a position of the optical pickup is in a predetermined location at a time of a track jump command **(column 9:5-11 of Akiyama);**

immediately outputting the track jump command to the optical pickup if the pickup is within the predetermined range, as broadly claimed;

and delaying the outputting of the track jump command if the pickup is not within the predetermined range, as broadly claimed **(column 9:5-11 of Akiyama discloses that the light spot must be correctly positioned before the track jump commences; also see column 4:59-66)**.

The combined disclosures of Aoe, Nakatsu and Akiyama do not expressly teach judging whether a position of the optical pickup is within a predetermined range relative to a center of the track at a time of a track jump command.

However, since Akiyama teaches that by centering the light spot on the instant track prior to commencing a track jump, the accuracy of a track jump is improved, it follows that delaying a track jump until the pickup is within a predetermined range of a center of a track, will also act to increase the accuracy of a subsequent track jump.

The combined disclosures of Aoe, Nakatsu and Akiyama do not expressly teach controlling the pickup relative to an eccentrically rotating track of an optical disc.

HIRAI teaches, in **paragraph [0005]** that it is well known that the data track often rotates eccentrically about the axis due to a miss-alignment of the center hole of the disk with a guide on the turntable for locking the disk. The miss-alignment may result

from deficiencies in the machining precision of the hole and/or the guide, positional errors in assembling the turntable with the spindle motor, and/or errors in forming the track on the disk. Hirai discloses that for theses reasons, it is necessary to compensate for eccentric rotation of a data track when tracking the laser beam onto a desired track of an optical storage medium. Hirai further discloses that to increase the popularity of optical disks, it is necessary for the disk drive to be able to compensate for the above inherent eccentricity **([0009]).**

For the reason(s) suggested by Hirai, it would have been obvious for one of ordinary skill in the art at the time of the invention to include within their apparatus, means for compensating for an eccentricity of an optical disk.

Regarding claim 13,

Akiyama teaches delaying the outputting of the track jump command to the optical pickup until the optical pickup is within a predetermined range **(Akiyama teaches that the beam spot must be centered on the track prior to commencement of the final jump, see column 4:56-60);** and outputting the track jump command to the optical pickup while the optical pickup is within the predetermined range **(column 4:63-66).**

Regarding claim 15,

Both Nakatsu and Akiyama teach that the track jump command causes the optical pickup to start moving toward a target track of the optical disc **(see column 5:1-2);** and the method further comprises outputting a track jump stop command to the optical pickup when the optical pickup arrives at the target track **(column 6:21-26 of Nakatsu discloses that when the beam spot crosses the last midpoint before the target track, the jump-stop control signal will be generated).**

6. **Claims 10-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Aoe** in view of **Nakatsu** and **Akiyama**, as applied to claims 1, 4 and 6 above, and further in view of **Nagano (US 4,819,219).**

Regarding claims 10-12,

The combined disclosures of Aoe, Nakatsu and Akiyama teach the limitations of claims 1, 4 and 6, respectively. They fail, however, to expressly teach that the track jump-start and track jump command signals are a "kick voltage" or that the jump-end control signal and track jump stop command signals are a "brake voltage".

NAGANO expressly teaches that a track jump signal including a kick pulse/voltage and a stop pulse i.e., "brake voltage" may be used to accurately achieve track jump operations. **(see "Abstract"; also see column 1, lines 55 - column 2, lines 6).**

It would have been obvious to alter the combined teachings of Aoe, Nakatsu and Akiyama, per the teachings of Nagano, applying the track jump-start signal or track jump command signal in the form of constant amplitude pulse with a voltage, and likewise obvious to apply the track jump-end control signal or track jump stop command signal in the form of a stop/brake pulse having a voltage, for the purpose of causing the beam moving means to jump the optical beam over a designated number of tracks in a single, substantially continuous movement.

7. **Claims 14 and 16,**are rejected under 35 U.S.C. 103(a) as being unpatentable over **Aoe** in view of **Nakatsu, Akiyama** and **Hirai,** as applied to claim 9 above, and further in view of **Nagano (US 4,819,219).**

Regarding claims 14 and 16,

The grounds for rejection of claims 14 and 16 are set forth in the rejections of claims 10-12, above.

Response to Arguments

8. Applicant's arguments filed 05/08/2009 regarding Applicant's traversal of the rejection of claims 7 and 8 under 35 USC 112, second paragraph, have been fully considered but are not persuasive:

With regard to the second paragraph of 35 U.S.C. 112 rejection, the Examiner has sought clarification for the phrase recited in claims 7 and 8 from the issuance of the non-final rejection mailed on 9/16/2008. Specifically, in the non-final rejection mailed on 9/16/2008, the Examiner wrote the following:

"Specifically, claim 7 recites in lines 3-4, "...controller calculates a target track to be jumped to". It is unclear to the Examiner how the controller calculates a "target track". Does Applicant mean to recite "..controller calculates a distance to the target track to be jumped to" OR, "..controller calculates the drive signal needed to travel to the target track to be jumped to" . Clarification and/or correction is required."

However, the Applicant has elected to reference a similar recitation in the Applicant's specification and to debate semantics (track vs. file), rather than to clarify the aforementioned issues.

As the Applicant has failed to clarify the claims, the Examiner must make further inquiries in an attempt to better understand that which the Applicant regards as his invention. For example, lines 13-15 of claim 6 states that the controller outputs a track

jump start control signal to move the pickup to a target track. This particular recitation of claim 6 implies that the target track is known i.e. has been calculated, prior to the issuance of said a track jump start control signal. However, claim 7 recites that following the issuance of the track jump start control signal, the target track is calculated. Is the target track unknown at the time of issuance of the track jump start control signal, as recited in claim 6. Does claim 7 intend to recite that the target track is calculated a second time?

Since the Applicant has failed to clarify the issues of claims 7 and 8, as indicated in the previously issued non-final and final official actions of 9/16/2008 and 3/17/2009, respectively, the Applicant has therein failed to particularly point out and distinctly claim the applicant's invention.

9. Regarding Applicant's arguments related to Feature 1, Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

10. Regarding Applicant's argument that: **Nothing In Akiyama Teaches That The Track Jump Control Unit (8) Controls Switch (9) To Switch From Position A To Position B Based On An Actual Judgment That The Light Spot Is Centered:**

The Examiner has previously cited those passages of Akiyama which fairly suggest such a limitation. Column 7, lines 14-25 disclose resuming tracking operation following a jump to position P2. Furthermore, column 9, lines 5-16 expressly teaches "thereby appropriately positioning the light spot to the correct position in the center of

the track *before* the start of the second jump". The Applicant repeatedly argues that Akiyama does not teach "track jump based on a judged position of the light spot", However, the Examiner is of the opinion that Akiyama's disclosure is clear in that a center position of the light spot is achieved **before** starting the second jump. Furthermore, the Examiner is not convinced that the passages of Akiyama, specifically column 9, lines 5-16, could be interpreted in any other way so as not to fairly correspond to the Applicant's recitation. Additionally, it is noted that the features upon which applicant relies (i.e., the track jump control unit for controlling a switch to switch from position a "a" to a position "b" based on an actual judgment that the light spot is centered) are neither supported by the Applicant's specification, nor specifically recited in the rejected claim(s).

11. Regarding the Applicant's argument that **Neither Nakatsu nor Akiyama Disclose Or Suggest A Driver To Move The Pickup Directly To A Target Track Of The Optical Disc In Response To The Track Jump Start Control Signal:**

Nakatsu is relied upon as teaching a driver to move the pickup directly to a target track of the optical disc in response to the track jump start control signal, as is clearly addressed in the detailed rejection above and is further supported by the Nakatsu specification. Furthermore, Akiyama's disclosure of a jump from position "P2" to position "P3" fairly constitutes a "direct" jump.

12. Regarding the Applicant's argument that **Akiyama Does Not Generate The Track Jump Start Control Signal For The First Jump Based On The Result Of The Tracking Operation, Therefore It Would Not Be Obvious To Modify Nakatsu Per The Teachings Of Akiyama:**

The question as to the novelty of generating the track jump control signal based upon the position of the pickup, has been fairly answered in consideration of the Akiyama reference which recognizes a need in the art for controlling the commencement of track jump based upon the position of the pickup.

The disclosure of Akiyama addresses two issues: *The first* being the provision of a simplified structure for the driving apparatus which may be provided at reduced cost while still operating to provide stable access operations. Akiyama resolves the first issue by suggesting the 2-track jump method. *The second issue*, which has been identified as that subject matter most pertinent to the Applicant's invention, pertains to increasing the accuracy of the position of the light spot when it arrives at the target track. Akiyama resolves this issue by positioning the light spot to a corrected position prior to jumping to the target track. It is Akiyama's disclosure with respect to the second issue, which fairly anticipates that which is disclosed by the Applicant. Akiyama's teaching of proper centering of the light spot before a jump to the target track, may be applied to track accessing operations in general. Akiyama **does not** restrict the use of centering prior to track jump, only to track jump operation comprising a plurality of track jumps. The disclosure of Akiyama is however, interpreted as emphasizing the track accessing operation in which the pickup actually

reaches the target track. According to Akiyama's disclosure, it is by focusing on this particular track accessing operation and incorporating the centering operation, that accuracy of the position of the light spot when it arrives at the target track is significantly improved.

13. Regarding Applicant's Arguments Related To Claims 4, 6, 7, 8 And 9:

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DIONNE H. PENDLETON whose telephone number is (571)272-7497. The examiner can normally be reached on 10:30-7:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571-272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dionne H Pendleton/
Examiner, Art Unit 2627

/Wayne Young/
Supervisory Patent Examiner, Art Unit 2627